

PATENT SPECIFICATION



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COMPLETE SPECIFICATION.

Improvements in and relating to Belt Drives.

We, FRANZ CLOUETHE RHEINISCHE GUMMI-WARENFABRIK AKTIEN-GESELLSCHAFT, of 102—116, Niehlerstrasse, Köln-Nippes, Germany, a German Company, and 5 "ISDEG" INDUSTRIE-UND SCHIFFSBEDARF GESELLSCHAFT MIT BESSCHRÄNKTER HAFTUNG, of 40, Linkstrasse, Berlin, W. 9., Germany, a German Company, do hereby declare the nature of this invention and 10 in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to a belt drive, 15 more particularly for a V-belt, comprising a large working pulley having only a single groove, a smaller working pulley having a plurality of grooves, and an intermediate pulley having one groove less than the smaller working pulley, wherein 20 the belt passes directly from the two sides of the larger pulley to the two outermost grooves of the smaller working pulley, and passes round a groove in the intermediate pulley between each two adjacent 25 grooves of the smaller working pulley.

The power transmitted by a V-belt depends entirely on its friction against the grooves of the belt pulleys. The 30 danger of slipping is naturally particularly great with small belt pulleys, owing to the small angle embraced by the belt. For this reason it is in many cases necessary to arrange several V-belts next to one 35 another, although the cross-section of a single belt would be amply sufficient for transmitting the power. A tightening pulley, such as is used in the case of flat belts, only slightly increases the angle of 40 contact, and is of little advantage, more particularly with V-belts, as such belts bend less readily in the opposite direction, as required by the tightening pulley, and as their life is thereby very adversely 45 affected.

A belt drive for a motor cycle or light car has already been proposed comprising a large driven pulley having only a single groove, a smaller driving pulley having 50 two grooves, and an intermediate pulley having one groove, wherein the belt passes directly from the two sides of the larger pulley to the two grooves of the smaller working pulley and passes round the

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groove in the intermediate pulley between 55 its two passages round the smaller working pulley.

According to the present invention the smaller working pulley has more than two grooves, and the intermediate pulley 60 therefore has more than one groove.

According to an alternative form of the invention the transmission of power is assisted by connecting the intermediate pulley with the driven pulley by means of 65 a separate belt, chain or the like.

The intermediate pulley may also be utilised in other ways along with the driven pulley for the performance of work.

The accompanying drawing illustrates 70 two constructional forms of the invention, Figures 1 and 2 being views at right angles to one another of one constructional form and Figure 3 showing another constructional form.

In the examples shown in the drawings, 75 a is the larger working pulley, b the smaller working pulley and c the intermediate pulley. Either the pulley a or the pulley b may be the driving pulley.

In Figures 1 and 2 the V-belt is guided in the following manner:—From the pulley b one stretch d runs directly to the pulley a, from which the stretch e leads to the intermediate pulley c, and thence, 80 forming the stretch f, to the second groove of the pulley a, from which the stretch g leads back to the pulley b.

In order to assist the transmission of 85 power the pulley c is connected with the pulley a by a chain h, meshing with chain wheels i and k keyed to the shafts of the pulleys c and a respectively.

In Figure 3 the smaller working pulley 90 a' is shown with three grooves and the intermediate pulley c' with two grooves. The stretch d of the belt runs from the larger pulley b' to an outer groove of the pulley a', the stretch e from the pulley a' to the pulley c', the stretch f from the pulley c' to the middle groove of the pulley a'. The stretch g from the middle groove of the pulley a' to the second groove of the pulley c', the stretch l from 100 the intermediate pulley to the third groove in the smaller working pulley and the stretch m from the pulley a' back to the

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large working pulley b^1 .

It will be seen from Figure 3 that the axes of the pulleys b^1 and c^1 are so inclined to the plane containing the axis of the working pulley a^1 that the planes containing the grooves in the pulley a^1 pass approximately through the points at which the various stretches of the belt enter and leave the grooves in the pulleys b^1 and c^1 . The belt is slightly twisted, but this is in no way detrimental.

The distance between the pulleys may be made adjustable the arrangement being preferably such that the intermediate pulley c or c^1 is capable of sliding or rocking. It may be at any distance from the pulley a or a^1 . The intermediate pulley may even be on the further side of the pulley b or b^1 .

Through the arrangement according to the present invention the contact angle of the V-belt on the pulley a becomes considerably greater and may even be manifolded. The power to be transmitted can, therefore, be increased as far as the tensile strength of the belt cross-section will allow. In most cases the friction of the V-belt will be sufficiently increased by the arrangement shown, so that it will not be necessary to take the belt backwards and forwards more often between the pulleys.

When the present arrangement is used for flat belts, lateral belt guides could be dispensed with. The belt may, of course, be used crossed. For transmitting greater power several belt drives of the kind described above can work simultaneously next to one another.

An arrangement has already been proposed for transmitting power by means of a round endless belt, a large working pulley having a single groove, a small working pulley having a plurality of grooves; three for example, an intermediate pulley having the same number of grooves as the small working pulley, and a single-grooved yieldingly mounted pulley for taking up the slack in the belt, wherein the belt passes directly between

one side of the large pulley and one end groove of the small working pulley, but passes round the yieldingly mounted pulley on its way between the other side of the large pulley and an end groove of the intermediate pulley.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:

1. A belt drive, more particularly for a V-belt, comprising a large working pulley having only a single groove, a smaller working pulley having three or more grooves, and an intermediate pulley having one groove less than the smaller working pulley, wherein the belt passes directly from the two sides of the larger pulley to the two outermost grooves of the smaller working pulley, and passes round a groove in the intermediate pulley between each two adjacent grooves of the smaller working pulley.

2. A belt drive, more particularly for a V-belt, comprising a large working pulley having only a single groove, a smaller working pulley having a plurality of grooves, and an intermediate pulley having one groove less than the smaller working pulley, wherein the belt passes directly from the two sides of the larger pulley to the two outermost grooves of the smaller working pulley, and passes round a groove in the intermediate pulley between each two adjacent grooves of the smaller working pulley, characterised by the feature that the driven pulley and the intermediate pulley are connected together by a separate belt, chain or the like.

3. A belt drive as claimed in claim 1 or 2, characterised by the feature that power is taken from the third or intermediate pulley for the performance of work.

Dated this 25th day of June, 1930.

MARKS & CLERK.

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[This Drawing is a reproduction of the Original on a reduced scale]

